

Juno



- First solar-powered mission to Jupiter
- Eight science instruments to conduct gravity, magnetic and atmospheric investigations, plus a camera for education and public outreach
- Spinning, polar orbiter spacecraft launched in August 2011
 - 5-year cruise to Jupiter, arriving July 2016
 - About 1 year at Jupiter, ending with de-orbit into Jupiter in 2017
- Elliptical 11-day orbit swings below radiation belts to minimize radiation exposure

Juno Science Objectives

Origin

Determine the abundance of water and place an upper limit on the mass of Jupiter's dense core to decide which theory of the planet's origin is correct

Interior

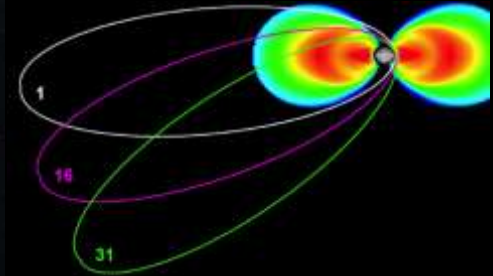
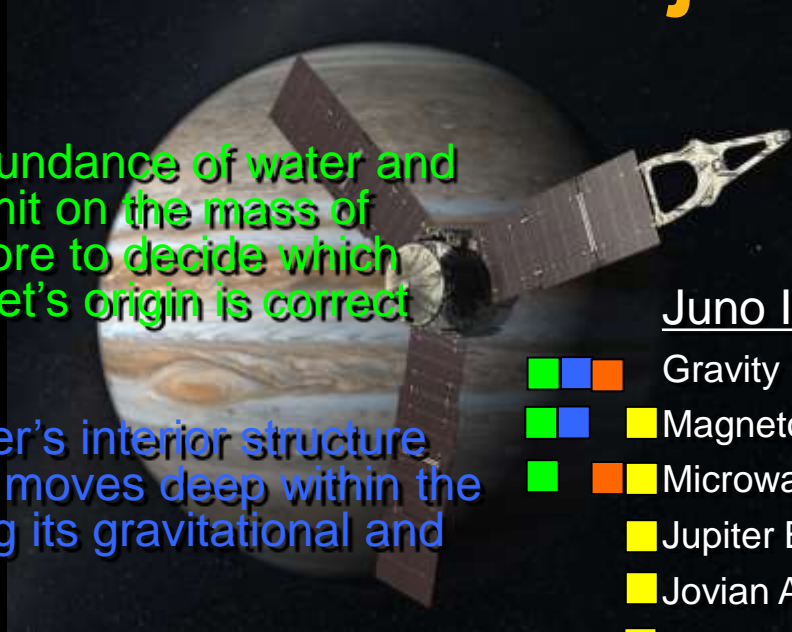
Understand Jupiter's interior structure and how material moves deep within the planet by mapping its gravitational and magnetic fields

Atmosphere

Map variations in atmospheric composition, temperature, cloud opacity and dynamics to depths greater than 100 bars at all latitudes

Magnetosphere

Characterize and explore the three-dimensional structure of Jupiter's polar magnetosphere and auroras.



Juno Instruments

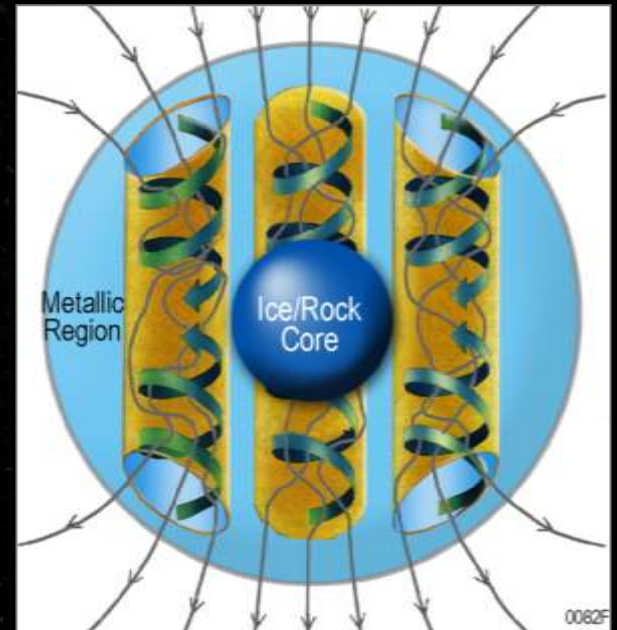
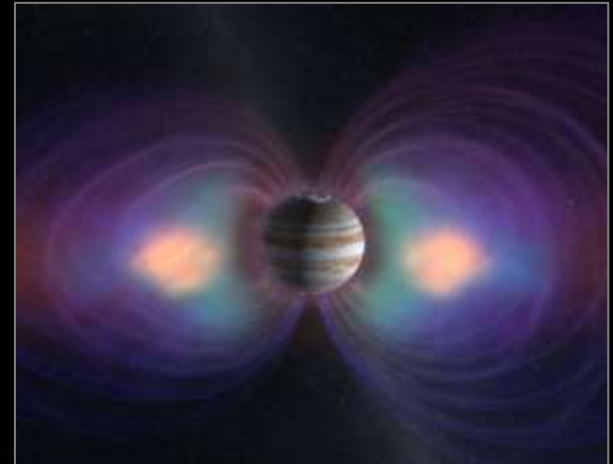
-    Gravity Science
-    Magnetometer
-    Microwave Radiometer
-  Jupiter Energetic Particle Detector
-  Jovian Auroral Distributions Experiment
-  Plasma Waves Instrument
-  Ultraviolet Spectrometer
-   Infrared Camera
- Visible Camera— JunoCam



Mapping Jupiter's Magnetic Field

Jupiter's magnetic field lets us probe deep inside the planet.

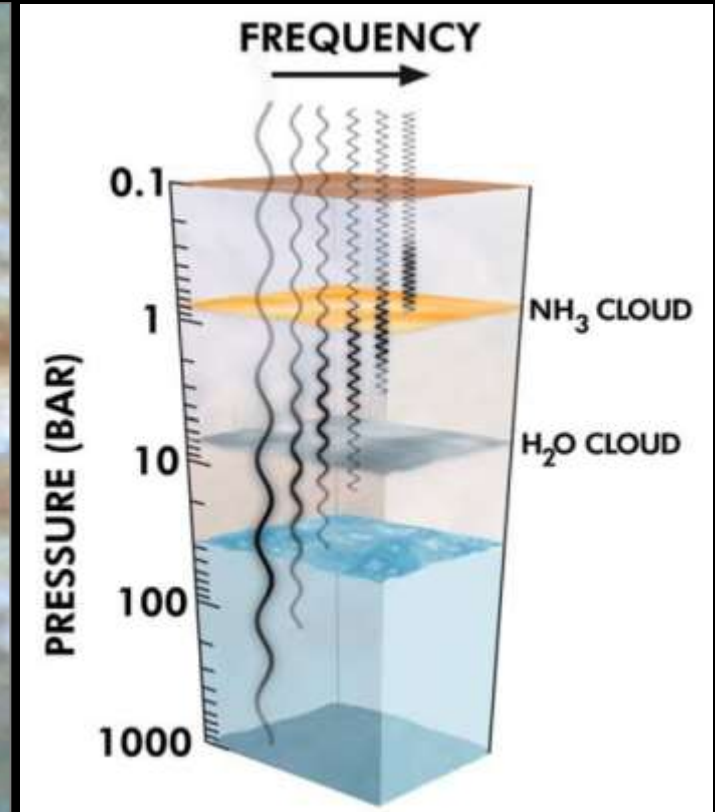
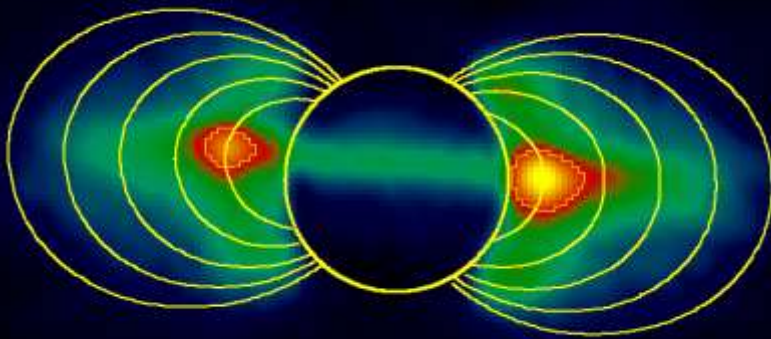
Juno's polar orbit provides complete mapping of planet's powerful magnetic field.



Sensing the Deep Atmosphere

Juno's Microwave Radiometer measures thermal radiation from the atmosphere to as deep as 1000 atmospheres pressure (~500-600km below the visible cloud tops)

Determines water and ammonia abundances in the atmosphere all over the planet



Synchrotron radio emission from the radiation belts makes this kind of measurement impossible from far away on Earth

Exploring the Polar Magnetosphere

Jupiter's magnetosphere near the planet's poles is a completely unexplored region!

Juno's investigation will provide new insights about how the planet's enormous magnetic force field generates the aurora.

